

CLAIMS

1. A composition for producing a foam for use in protecting plants against frost or freezing temperatures comprising:

a vegetable oil; - soybean

an emulsifier; and - alcohol ethoxylate, ethylene oxide

a foaming agent. - alkyl sulfate

2. The composition of Claim 1 further comprising water.

3. The composition of Claim 1 wherein ^{said} the vegetable oil is a crude vegetable oil.

4. The composition of Claim 3 wherein said emulsifier comprises a compound of silicone.

5. The composition of Claim 4 wherein said compound of silicone is a methylated silica polydimethylsiloxane.

6. The composition of Claim 1 wherein the vegetable oil is selected from the group comprising of coconut oil, corn oil, cottonseed oil, palm oil, rapeseed oil, soya, and sunflower oil.

7. The composition of Claim 1 wherein said emulsifier is an alkyl alcohol ethoxylate.

8. The composition of Claim 1 wherein said foaming agent comprises neutralized alkyl sulfates.

9. The composition of Claim 1 wherein said foaming agent comprises neutralized alkyl sulfonates.

10. The composition of Claim 1 wherein said foaming agent comprises neutralized aryl sulfonates.

11. The composition of Claim 1 wherein said foaming agent comprises neutralized alkyl sulfate and triethanolamine.

✓ 12. The composition of Claim 1 wherein said foaming agent comprises an amine oxide.

✓ 13. The composition of Claim 1 wherein said foaming agent comprises a quaternary ammonium compound.

14. The composition of Claim 1 wherein said foaming agent comprises an alkyl alcohol. *oxyalkyl alcohol*

Sub 103 15. The composition of Claim 1 wherein said foaming agent comprises aryl alcohol. *oxyalkyl alcohol*

16. The composition of Claim 1 wherein said foaming agent comprises hydrolyzed protein.

17. The composition of Claim 1 wherein said foaming agent comprises oxyalkylates.

✓ 18. The composition of Claim 1 further comprising a carboxyalkylcellulose as a foam stabilizer.

19. The composition of Claim 1 further comprising a mucilage as a thicker.
20. The composition of Claim 1 further comprising a growth regulator.
21. The composition of Claim 20 wherein said growth regulator comprises an ethylene.
22. The composition of Claim 1 further comprising a pesticide.
23. The composition of Claim 22 wherein said pesticide comprises malathion.
24. The composition of Claim 22 wherein said pesticide comprises mineral oil.

25. A composition for producing a foam for use in protecting plants against frost or freezing temperatures comprising:

a pre-emulsion concentrate comprising a crude vegetable oil, an emulsifier, and a foaming agent; and

water;

wherein said crude vegetable oil is selected from the group ^{consisting} comprising soya oil, coconut oil, corn oil, cottonseed oil, palm oil, rapeseed oil, and sunflower oil

wherein said emulsifier is selected from the group ^{consisting} comprising alkyl, aryl, or glycol ethoxylate, propoxylate, butoxylate or sulfonate based emulsifiers; and

wherein said foaming agent is selected from the group ^{consisting} comprising quaternary ammonium compounds, amine oxides, neutralized alkyl sulfates, neutralized alkyl and aryl sulfonates, hydrolyzed protein, ~~alkyl alcohol, aryl alcohol, and~~ oxyalkylates.

26. The composition of Claim 25 wherein said emulsifier comprises a 3 mole ^{ethylene} ~~ethylene~~ oxide adduct of C12 and C14 alcohols.

27. The composition of Claim 25 wherein said emulsifier comprises about 30% to about 50% by weight of C12 alcohol and about 50% to about 70% C14 alcohol and wherein said C12 alcohol and said C14 alcohol are ethoxylated with 3 moles of ethylene oxide.

28. The composition of Claim 25 wherein said composition further ^{comprising} ~~comprises~~ sodium lauryl sulfate and triethanolamine.

29. The composition of Claim 25 wherein said composition further comprises a foam stabilizer and thickener selected from the group comprising carboxyalkylcellulose and mucilage.

30. The composition of Claim 25 further ^{comprising} ~~comprises~~ a growth regulator. ✓

31. The composition of Claim 25 further comprising a pesticide. ✓

32. The composition of Claim 25 wherein said pre-emulsion concentrate comprises about 75% by weight of soya oil; about 20% by weight of said emulsifier comprising 3 mole ethylene oxide adduct of C12 alcohol and C14 alcohol; about 3% by weight of sodium lauryl sulfate; and about 2% by weight of triethanolamine.

33. A method of protecting plants from frost or freezing temperatures comprising the steps of:
producing a pre-emulsion concentrate comprising a vegetable oil, an emulsifier and a foaming agent;
mixing the pre-emulsion concentrate with water to form an oil and water emulsion;
aerating the oil and water emulsion to form a foam; and
applying the foam to the plants.

34. An apparatus for dispensing a foam over the surfaces of plants comprising:
means for storing a pre-emulsion concentrate;
means for mixing said pre-emulsion concentrate with water to form an oil and water emulsion;
means for aspirating said oil and water emulsion to form a foam; and
means for directing said foam onto the surface of a plant.